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FEDERAL ENERGY MANAGEMENT PROGRAM
FOCUS

U.S. Department of Energy
Energy Efficiency and Renewable Energy
September 2000

FEMP is Your Partner in Making Projects Happen!

Public Purpose Energy-Efficiency Programs: An Opportunity for Federal Customers

Federal customers have often looked to their local utilities for technical advice and financial assistance, whether it be incentives or financing, on energy-efficiency projects. However, as various states restructure their electricity market, the demand side management (DSM) programs offered by utilities have changed significantly. In many parts of the United States, utilities have significantly scaled back funding for energy-efficiency programs as DSM spending has declined by about 50 percent since 1993. However, state legislatures or public utility commissions in 17 states have decided that energy-efficiency programs should be funded by a small system benefit charge and administered by either the local electric distribution utilities, state agencies, or non-profit corporations (depending on the state). Thus, there are still significant opportunities for Federal customers to work with energy-efficiency program administrators that manage more than $800 million per year in programs (see Table 1 on page 26).

Case Studies

Compared to other institutional customers (e.g., state & local governments, schools), Federal customers have been less aggressive in leveraging these program opportunities. There are, however, a number of successes.

- Since 1999, the New York State Energy Research and Development Authority (NYSERDA) has administered a $176 million, 3-year initial public benefits program, called New York Energy Smart. The program consists of 29 energy efficiency, R&D, and low-income initiatives. The largest program is a performance-based program called Standard Performance Contract (SPC) that offers financial incentives to ESCOs for documented energy savings achieved by installing energy efficiency measures as specified in a standard contract. The General

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The *FEMP Focus* is published bimonthly by the Federal Energy Management Program of the U.S. Department of Energy/Office of Energy Efficiency and Renewable Energy.

If you are making projects happen at your Federal facility, FEMP would like to hear from you. Please submit project descriptions to Annie Haskins at the address listed below. You will be contacted for additional information if your project is selected to be featured in a future edition of the *FEMP Focus*.

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FEDERAL ENERGY MANAGEMENT PROGRAM

The Director's Column

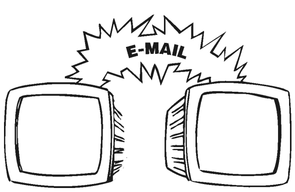

Beth Shearer, FEMP Director

The role that utilities play in servicing Federal customers has undergone significant change over the last 25 years and the rate of change is accelerating. Twenty years ago the traditional utility generated, transmitted and distributed the electricity (and gas) we used in our homes and businesses. Their mandate was to deliver inexpensive and reliable power.

- In the 1970s, state regulatory agencies, urged on by environmental groups and empowered by the high costs of new generation facilities, began to authorize demand side management programs. Through these programs the utilities began to assist their customers with efforts to reduce demand through energy efficiency.
- In 1978 the Public Utility Regulatory Policies Act (PURPA) was passed to develop markets for power generated from other than conventional sources. This act required utilities to purchase power from co-generation facilities and those fueled by renewable resources. A renewable source is considered regenerative or virtually inexhaustible. With the enactment of PURPA the first wholesale markets for power were created for electricity from co-generation and renewable sources.
- The Energy Policy Act (EPACT) of 1992 took the next steps in deregulating the electric power industry by opening access to transmission networks and exempting some non-utilities from certain regulatory requirements allowing their participation in wholesale electric power sales.
- EPACT also authorized Federal agencies to take advantage of utility project financing and utility project implementation capabilities, including project financing.

The services available to a Federal facility from the local utility have changed dramatically as the industry and regulatory environment have evolved. From providers of electrons and gas the utility companies have evolved into service organizations with capabilities and legislative authorities to provide energy from traditional and green sources and deliver energy efficiency and demand side management services, including project financing. The industry continues to change as restructuring activities progress. The issues are, to be sure, complex. We at FEMP hope you will find this issue of the *Focus* and other FEMP resources referenced throughout the issue to be helpful in your work.

***FEMP Focus* by E-mail**



FEMP Focus is studying the feasibility of adding an e-mail newsletter subscription that would replace the printed version. By signing up for the e-mail newsletter, your copy of the *Focus* would be sent to your e-mail address and you would no longer receive the printed version. Some of the benefits of switching to an e-mail subscription include more timely delivery and sharper graphics and photos. And because less paper and ink are used in the newsletter's production, you'll help save energy, money, and valuable natural resources.

Currently, about 350 people have signed up to receive the electronic version; however, there needs to be an interest of at least 1,000 people to make a difference in the printing costs. If you are interested in receiving *FEMP Focus* via e-mail, visit the Web site at www.eren.doe.gov/femp/newsevents/whatsnew.html. As always, there is no subscription fee to receive the *Focus*.

EO 13123 Guidance on Electricity Use

The Utility Working Group, a multi-agency collaborative effort chaired by the Department of Energy, has developed guidance on purchasing electricity from Renewable Resources.

The guidance fulfills the requirement under Section 404 [c] of Executive Order 13123 (EO 13123). After evaluating their current use of electricity from renewable energy sources, agencies are encouraged to "adopt policies and pursue projects that increase the use of such electricity" and "include provisions for the purchase of electricity from renewable energy sources as a component of their requests for bids whenever procuring electricity."

In order to develop effective policies and procurement approaches to achieve the Federal goals and increase the use of renewable energy sources, agencies are encouraged to consider the following issues: (1) definition of renewable energy and (2) approaches for incorporating renewable energy into competitive solicitations for electric power.

A. Definition of Renewable Energy

EO 13123 defines "renewable energy" as energy produced by solar, wind, geothermal, and biomass power. Section 404 [c] states that "in evaluating opportunities to comply with this section, agencies should consider … the renewable portfolio standard specified in the restructuring guidelines for the state in which the facility is located." The commercial practices of retail energy suppliers offering renewable energy in states with retail competition tend to comply with state definitions of renewable energy. If agencies use state definitions of renewable energy in their solicitations, they can more easily utilize "commercial items" provisions of the Federal Acquisition Regulations (FAR). However, this approach may create a reporting problem for agencies because some states have a definition of environmentally-preferable renewable resources that is inconsistent with the Federal definition. Credit for Green House Gas Emissions reductions may be appropriate for types of measures not included in the Federal definition. However the credit toward renewables goals can only be taken for those types of measures defined in EO 13123.

Encouraging agencies to utilize state definitions of renewable energy in electric power solicitations offers the following advantages: (1) reduced administrative costs for agencies in states that rely on a state agency or non-profit organization to audit the transactions of retail suppliers to ensure compliance with state rules on renewable energy, and (2) agencies can more easily utilize the favorable contracting procedures associated with "commercial items."

Given this situation, it is recommended that agencies give deference to and utilize state definitions of renewable energy.

B. Incorporating Renewable Energy Sources into Competitive Power Solicitations for Electric Power

Competitive solicitations for electric power are an important mechanism that agencies can use to achieve renewable energy goals established by Federal agencies. When agencies solicit offers for electric power supply, they should consider the following issues that arise in specifying and purchasing renewable energy that are environmentally preferable.

Product Specification

- Agencies should consider the percentage of the power product that is generated by new versus existing renewable generation facilities.
- Agencies should consider the types of resources that make up the non-renewable portion of offered electricity products.
- Agencies should require retail electric suppliers to report their generation resource mix.

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Partnership Helps GSA Bring PV Power to Boston Edison's Network

Sometimes "bad news" has very good results. For example, a few years ago the General Services Administration's John F. Williams Federal Building in Boston, MA, was identified as one of the most costly buildings to operate, per square foot, in the entire New England Region. To help improve the building's efficiency, GSA decided to call on DOE-FEMP's Paul King in the Boston Regional Office for a SAVEnergy audit.

The resulting SAVEnergy Action Plan recommended several energy- and money-saving conservation measures. These included switching the nine-story building from expensive district steam to in-house gas boilers, and replacing the chlorofluorocarbon (CFC)-based chillers. At about the same time, the GSA project team found that the building's roof was scheduled for replacement. Project team members Roman Piaskoski and Sean Orgel, aware of Federal directives to show leadership in the use of renewable energy, decided to perform a building life-cycle-cost analysis to see if there were any opportunities for renewable technologies. The analysis suggested they should consider installing a building-integrated photovoltaic (PV) array to obtain both a clean, new source of electricity and a new roof.

The roof-integrated array, completed in October 1999, is one of the largest operating solar arrays in the Northeast. Containing 372 solar panels, the array covers 3,930 square feet. It will help to offset an estimated 28,000-50,000 kilowatt-hours of conventional electric power for the building each year.

Faced with a shortage of available funds to begin the project, the GSA team was able to leverage funding from several sources to pay for the roof-integrated system. The team applied for and received $1.4 million from GSA's Energy Center of Expertise National Energy Program. The project also qualified for $50,000 from the Utility Photovoltaic Group (UPVG). And DOE's Renewable Energy Program awarded the project $150,000.

In 1998, Enron Energy Services (EES), a subsidiary of Enron Corporation, had been awarded GSA's New England Region five-year contract to supply electricity at a percentage discount in the deregulated marketplace. GSA's contract with EES allows them to procure value-added services that range from energy audits and billing services to complete management of energy projects. GSA gave EES the SAVEnergy Action Plan report to use as a basis for their own walk-through audit. EES agreed with the recommendations of the SAVEnergy report and expanded upon them, suggesting 150 kilowatts of co-generation at the site. This measure allowed GSA to save on expensive peak electric costs and bring the PV project's simple payback period down to less than 10 years.

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The J.F. Williams Building in Boston, MA, was once identified as one of the most costly buildings to operate in the New England Region.

Utility Management and Planning –

Responding to Electric Utility Restructuring

How can Federal energy managers respond to the market realities resulting from electric-utility restructuring? In truth, there are no easy answers to this question. Unleashed electric-utility market forces are a relatively new phenomenon, and electricity prices are more volatile than ever. Federal customers are diverse, and the restructuring process dynamic, so most observers are hesitant to predict short- or long-term outcomes. Amidst this uncertainty, however, one factor remains within the control of the Federal customer: energy efficiency.

Twenty-five states, typically those with the highest electricity rates in the country, and that contain more than half of the U.S. population, have passed restructuring legislation. Each of these states has drafted new market rules that function in different ways and will be implemented on varying timelines, thereby setting a course to open electric-utility markets in the coming years. California and Pennsylvania have transitioned further than the other “restructured” states, but not without controversy (see page 10 for story on California).

Of the remaining 25 states that have not passed restructuring laws, virtually all have conducted studies, as they continue to debate and defeat restructuring bills. A combination of low rates, the rural character of many of these states, and unique circumstances such as transmission constraints suggests that relatively few of these “traditional regulation” states are likely to embrace restructuring soon.

Moving from the state to the Federal level, many observers are convinced that greater benefits can be achieved by reforming the wholesale electric-utility markets rather than reforming retail markets. Substantive change to the wholesale markets requires Congressional action, primarily by clarifying and increasing the role of the Federal Energy Regulatory Commission. After four years of debate on restructuring, however, Congress has not passed sweeping electric-utility legislation. This is due largely to reluctance by many in Congress to impose a national mandate over state and local control of electric generation and distribution. Although Congress continues to grapple with transmission and reliability issues, advocates for comprehensive legislation and those seeking single-purpose changes remain deadlocked.

In the states that have embraced restructuring, most of the new laws provide for either rate decreases or rate freezes, and many laws mandate system benefit charges (a 1 percent to 3 percent surcharge added to all electricity bills) and renewable portfolio standards to assist energy-efficiency improvements and renewable energy. Some states have made an extra effort to ensure the development of a competitive supplier market, giving customers real choices. Although market rules are changing, Federal customers have generally benefited from rate decreases and freezes, and funding for system benefits.

Federal building managers have responded actively in states that have restructured electric-utility markets. Competitive procurement opportunities have emerged, albeit under difficult circumstances. Energy managers can negotiate with the incumbent local utility, which may structure a customized energy services contract to retain the Federal customer. These customers have an incentive to install energy conservation measures—

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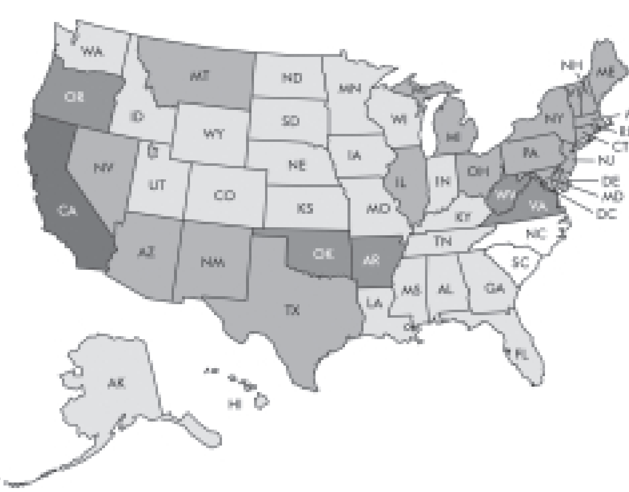
State by State Restructuring Status



Utility Management and Planning –

RESPONDING TO ELECTRIC UTILITY RESTRUCTURING
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an especially smart thing to do now to protect against the likelihood of higher electricity bills and the advent of real-time pricing. Innovative approaches to financing these measures -- Energy Saving Performance Contracts and Utility Energy Service Contracts -- entail no Federal up-front costs and serve two purposes: first, as a hedge against rate increases and, second, as a means of complying with the Energy Policy Act and Executive Order 13123.

In the states that have not passed restructuring legislation, Federal energy managers should inform electric-utility policy decisionmakers on the outcomes that are of interest to Federal customers. Some of the positive features of the rules in "restructured" states, such as system-benefit charges to fund energy efficiency and renewable energy projects, should be considered when Federal managers participate in state-level policy discussions.

If Congress passes comprehensive legislation in the next year or two, an opportunity will exist to provide a revenue stream for public purposes, such as energy efficiency and renewable energy. If electricity prices increase, as is widely expected, there will be greater interest in efficiency. Real-time pricing, which sends commercial and industrial customers a more accurate, and in some cases a more painful economic signal than average pricing, is becoming more common. Federal customers need to prepare for real-time pricing by installing energy management systems and, when it makes sense, on-site distributed energy resources.

The U.S. Government owns 422,000 housing structures and 51,000 non-residential buildings, resulting in 3.37 billion square feet of Federal gross floor space. These buildings exist in a variety of conditions and are managed by a wide range of Federal agencies, with the Defense Department in the lead. Some Federal sites contain very large electric loads that can be successfully managed to respond to restructuring, whereas smaller loads often must be aggregated to attract energy marketers. And privatization of Defense Department facilities introduces another major challenge to the mix. Given the diversity and sheer size of the Federal customer base, Federal customers, as expected, are not able to respond to electric-utility restructuring in a uniform way.

Despite the range of challenges presented by restructuring, Federal energy managers continue to seek out opportunities to control utility costs and save energy. Very often this is done with the help of the Defense Energy Support Center (DESC), the General Services Administration (GSA), and the Federal Energy Management Program (FEMP). To date, the DESC has issued solicitations in all "deregulated" states except Montana. These solicitations have been successful in California, New Jersey, Pennsylvania, and Maine. Competitive contracts have been negotiated despite difficulties, barriers, and occasional reversals. The GSA has negotiated competitive power procurement contracts in all states with open electricity markets. The recent volatility in electricity rates has certainly raised Federal agencies' interest in energy management. In response, GSA is encouraging sites to control demand either through self-generation or by load shedding. FEMP has the breadth and depth of experience in forming partnerships with Federal energy managers to make energy projects happen. Assistance is available by tapping into the FEMP staff. FEMP has expertise that ranges from SAVEnergy audits, to technical assistance in efficiency and renewable energy and water conservation, to assistance with alternative financing available through utilities and energy service companies.

Even during this period of flux in the electric-utility markets, there is good reason to be proactive. And many Federal energy managers continue to do just that. They exercise sound stewardship of their facilities by saving energy, reducing greenhouse gas emissions, using renewable energy, and conserving water.

For more information on the status of restructuring, please see FEMP's restructuring web site (http://www.eren.doe.gov/femp/utility.html), or contact Morey Wolfson, NREL, 303-384-7449.

Utility Management and Planning –

City of Austin Hosts Water Utility Partnership Meeting

On March 25, the city of Austin, TX, Water Conservation Division (WCD), held a meeting for their commercial, industrial, and institutional water customers. This meeting was part of FEMP's Water Utility Partnership program, which helps Federal agencies learn about incentives and other assistance available from local utilities to assist in water-efficiency project implementation.

Austin, which was the second city to agree to host a partnership meeting, invited state and local agencies as well as the Federal agencies, which are the focus of the Partnership. The larger audience provided an expanded forum for information exchange, as more than 80 people participated in the event. Topics covered included local water ordinances that affect government agencies, how conservation can save agencies money, how to set up conservation programs, and case studies on successful projects. In addition, the participants received detailed information on WCD services and rebates available to assist government facilities with projects.

Austin offers a number of financial incentives and free water conservation services to government customers both inside and outside the city limits.

Financial incentives include:

- Rebates of up to $40,000 for projects that reduce water consumption by at least 500 gallons per day,
- Rebates for toilets, clothes washers, waterless urinals, and water saving modifications to lawn irrigation equipment, and
- Free toilets, showerheads, and faucet aerators.

Free services include:

- Landscape irrigation system and whole system water use audits,
- Information on water-saving equipment,
- Employee training programs, and
- Awards and recognition for achievement.

For more information about services offered by the city of Austin contact Bill Hoffman at 512- 499-2893. For information on FEMP's utility partnership, contact Stephanie Tanner, National Renewable Energy Laboratory, 202-651-7517.

Federal Utility Partnership Working Group
Miami, Florida
November 30-December 1, 2000

***Hosts and Participants*:** The Federal Utility Partnership Working Group (FUPWG) will meet at the Sheraton Biscayne Bay Hotel in downtown Miami from November 30 – December 1, 2000. The meeting is hosted by Florida Power & Light. *Washington Update*, Success of Army Privatization RFPs, Utility Curtailment Plans for Summer 2001, GSA Update, Water Conservation Projects, and other topics will addressed.

***Purpose and Content*:** FUPWG meets approximately three times per year to facilitate partnerships between Federal agencies and their servicing utilities to implement energy efficiency, water conservation, and renewable energy projects at Federal facilities. The expertise of participants makes these meetings excellent forums for networking and exchanging information.

***Meeting Registration*:** Contact **Lori Schwarz,** of Energetics, Inc. at 202-479-2748 ext. 118 or lschwarz@energeticsinc.com.

***Information Regarding FUPWG*:** Contact Brad Gustafson, FEMP Utility Program Manager, at 202-586-2204 or brad.gustafson@ee.doe.gov.

Renewable Power Purchasing – An Overview

Executive Order 13123 Goals and Guidance

Executive Order 13123, signed by President Clinton in June 1999, contains several provisions that encourage the increased use of renewables by Federal agencies. Section 503 calls for the Department of Energy (DOE) to collaborate with other agencies to develop a Federal renewable usage goal. The Renewable Working Group (RWG) served as the forum for discussions regarding this goal. Their proposal—that the Federal government strive to have the equivalent of 2.5 percent of facilities' electricity consumption come from renewables by 2005—is in the approval stages. Federal agencies can increase their use of renewable energy through either on-site generation or by purchasing electricity generated from renewables. Purchasing renewable electricity may be preferable to on-site generation for some Federal sites, as it is relatively simple and requires no capital expenditures or system maintenance.

The Utility Working Group (UWG) was responsible for developing guidance on EO 13123 Section 404c "Purchasing Electricity from Renewable Energy Resources." This guidance, also in the approval stages, recommends deference to the state definition of renewables in order to simplify competitive procurements and includes other suggestions related to competitive power solicitations. The final RWG and UWG guidance

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Federal Agency Renewable Purchasing Projects

Federal Agency(ies)	Location	Type of Purchase	Supplier	kWh	Energy Resource Type(s)	Premium
Completed						
US Postal Service	California	Competitive Procurement	Go–Green.com	30M	Geothermal/Biomass/ Small Hydro	None
General Services Administration (GSA)	MA & RI	Competitive Procurement	Enron	4.8M	TBD (contract starts in October)[1]	~1¢/kWh[2]
GSA/EPA/National Park Service	Pennsylvania	Competitive Procurement	Energy Cooperative Association of PA	2.7M	Landfill Gas	Varies[3]
Environmental Protection Agency (EPA)	Richmond, CA	Competitive Procurement	Sacramento Municipal Utility District	1.8M	Landfill Gas/ Geothermal initially	10%,1¢/KWh max.
Environmental Protection Agency (EPA	Golden, CO	Green Pricing	Public Service Co. of Colorado (PSCo)	0.384M[4]	Wind	2.5¢/kWh
Bonneville Power Administration	Portland, OR	Green Pricing	Pacificorp	0.552M	Wind	4.75¢/kWh
Agreements (contracts still need to be signed)						
Denver Wind Purchase Initiative (31 agencies)	Colorado	Green Pricing	PSCo/Colorado Springs Utilities	25M	Wind	2.5¢/kWh
Environmental Protection Agency (EPA)	Manchester, WA	Green Tags[5]	Bonneville Environmental Foundation	2.1M	Wind	2.2¢/kWh
Oak Ridge National Laboratory	Oak Ridge, TN	Green Pricing	Tennessee Valley Authority	0.675M	Landfill Gas/ Wind/Solar	2.67¢/kWh

[1] Must meet Massachusetts emissions standards.
[2] Premium varies depending on customer type and standard offer for the utility service territory.
[3] Premium varies considerably depending on site - from below standard offer for one site to +18%.
[4] EPA Plans to increase their purchase to 100% (~1.6 million kWh) in the next year.
[5] Green Tags is an alternative method for purchasing green power. Customer purchases environmental benefits associated with renewable development (utility provider remains the same).

Utility Management and Planning—

The Wrath of Power Markets: Price Shock in San Diego

Background

Several large states have had electricity prices higher than the national average for many years due to the high cost of power generation. In response, many of them have deregulated the choice of power supplier to stimulate price competition (see article on page 17 for additional background on restructuring). California led the way in 1998. It established a transition period of up to four years during which utilities would still offer regulated rates while customers gained confidence purchasing from emerging competitive power markets. After the transition period, all customers would be fully exposed to competitive markets.

When the legislation was passed, it was assumed customer rates would decline at least 20 percent and new suppliers would serve most customers. Customers that did not choose a new supplier would still be provided with service, on a default basis, by the local utility. It was expected that the default service rates would not necessarily be the lowest. It also was expected that it would be up to customers to select the provider that best met their needs. Market rules were developed for the wholesale market and incumbent utilities. Innovation was awaited from retail marketers that would respond to that market without much regulatory meddling. In other words, regulators expected deregulation to attract innovation in products and services.

Fast forward to summer 2000. Headlines across California are complaining of high power bills and advocating a return to regulated rates. Some state officials are even telling customers not to pay their bills! What happened and why? Was restructuring a mistake?

Western Regional Context

Electricity demand growth has averaged 2 percent per year, or more, for at least a decade in the 11 western states. No significant new generation or transmission has been constructed to serve that load. Further, all of the western states experienced record setting temperatures. By mid-summer 2000, an increase of 15% demand in California exceeded 45,000 megawatts compared to peak demand of 40,000 megawatts in 1998, the 1st year of deregulation. On the supply side, water flows peaked early and have been below normal since May. The north-south intertie can carry different amounts of power depending on the temperature (more when its cool than when its hot). To prevent potential problems with the line overheating, transfers are artificially restricted during the summer months. Three major generators were down at the same time in California and in three more that typically export power to California. In response, wholesale market prices shot up in late May, again in June, and volatility has continued throughout the summer. Prices averaged twice the levels of the previous year and finally wholesale market price

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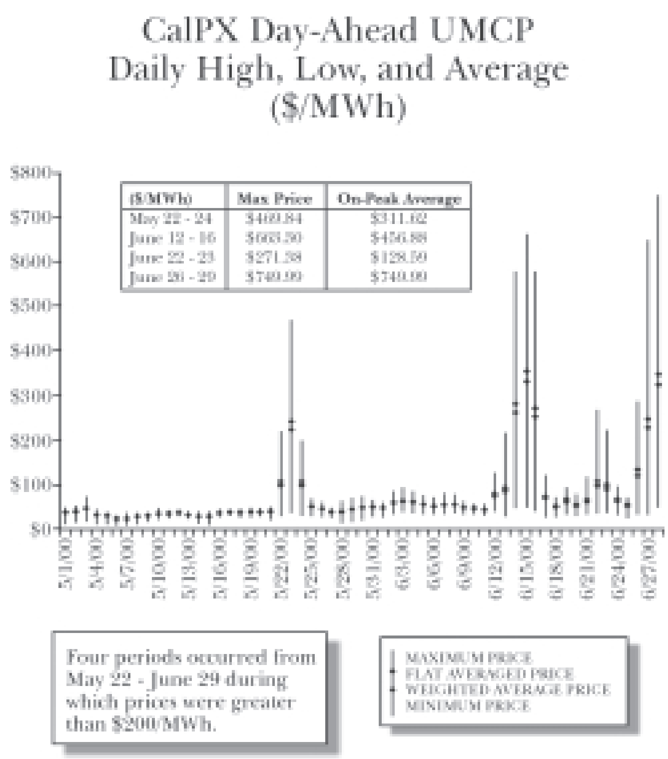

Utility Management and Planning–

THE WRATH OF POWER MARKETS: PRICE SHOCK IN SAN DIEGO
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caps were imposed in an attempt to limit retail bill impacts. As one power trader noted, “We expect price spikes, but not price plateaus.”

A key part of deregulation legislation in California was to create two new institutions, a Power Exchange (the Cal PX) to run the wholesale energy market and an Independent System Operator (the Cal ISO), to operate the utility’s transmission systems as a single, integrated whole. These new institutions replaced existing utility functions and substituted competitive markets for utility command-and-control decision-making. In order to understand how markets affect retail prices in California, it is necessary to have some understanding of the functions of the PX, the ISO, and their interactions.

Briefly, the Cal PX operates an energy kilowatt-hour market. The PX forecasts demand and solicits bids from suppliers to meet that demand. Because forecasts are never perfect, the PX conducts a day-ahead market (for energy for each of the next 24 hours), a day-of market (for energy a few hours hence), and a real-time energy market. Bids in all markets are selected based on price; lower price bids are selected before higher priced ones. When enough energy has been purchased to satisfy forecasted demand, the auction stops. Losing bidders are free to bid in other markets, such as the daily and real-time energy markets, or the various ISO markets. Most of the energy the PX believes it needs is obtained from the day-ahead market, which is expected to have the lowest prices. The daily and real-time markets are used to fine tune supplies. Less energy is traded in these markets and prices are often considerably higher than those in the day ahead market.

FERC has ordered that generation and transmission transactions be isolated from one another to ensure fair play and competition. Thus, the Cal ISO conducts its own markets to obtain the service it needs from generators. These are called ancillary services and include services like generation held in reserve in case transmission lines get overloaded. Reserve generation can be provided by power plants that are scheduled to sell power into the PX. As a result, the markets of the PX and the ISO interact with each other (the participants and prices in one affect the prices in the other). Generally, if generation is withheld from the PX market in hopes of higher prices in the ISO market, it results in higher PX prices. Thus, generators have an incentive to try and anticipate demand in the ISO markets and structure their bids into the PX accordingly.

California Market/Price Response

California utilities were required under the deregulation legislation to sell at least half of their generation to third parties and power from generators they kept into the PX and ISO. They were also required to buy all of the power they need to serve retail customers from the PX and ISO markets. As a result, these markets account for a whopping 80 percent plus of all power used in the state, higher than any other deregulated state. Consequently, volatility in these markets is passed through to retail customers served by the utility. Two of California’s three major regulated utilities are still in the transition period leading to fully deregulated markets. Retail customers served by these utilities are still on regulated rates that insulate them from market price changes. The other utility, San Diego Gas and Electric (SDG&E), has passed through the transition phase and has fully deregulated rates. Retail customers of SDG&E are now fully exposed to market price volatility. As a consequence, those customers saw the price of electricity double when market prices did. This happened just as use per customer was increasing due to the hot weather.

As an example, the PX energy price ranged between about 5 cents per kilowatt-hour to a high of $1.10 cents per kilowatt-hour during on-peak hours from mid-May through the end of June. Prices averaged about 6 cents, twice the previous year’s average. PX day-of and ISO market prices

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THE WRATH OF POWER MARKETS: PRICE SHOCK IN SAN DIEGO
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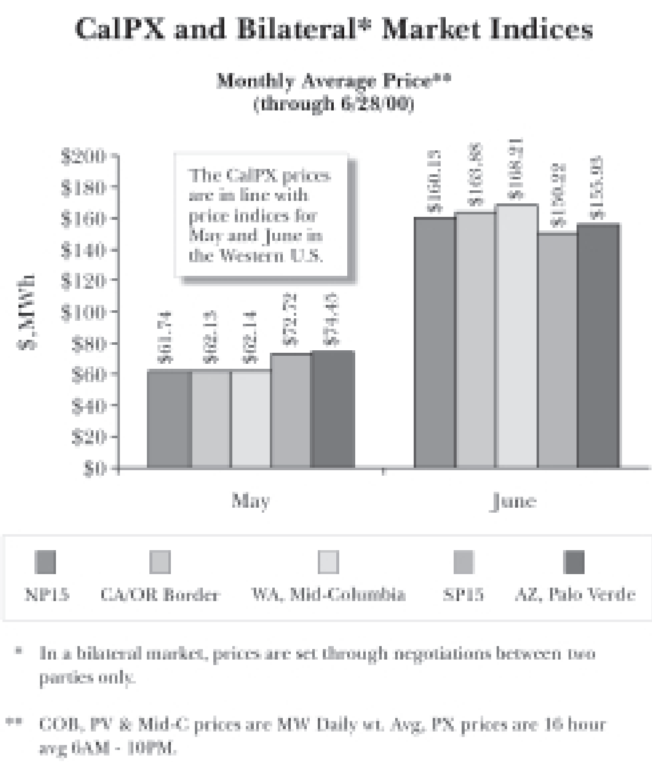
were higher, sometimes significantly so. This suggests that power sellers shifted capacity from the main PX market into ISO markets. Based on bid records, power sellers also bid into all of the markets with higher bids than last year. In other words, sellers were more confident that they would "win" with higher priced bids than last year. This probably reflects the fact that natural gas prices are nearly twice as high as last year. It also may mean that power sellers are getting more sophisticated in how they bid, given buyer demand and other market conditions (i.e., tight supplies region-wide and lower hydropower production).

Although these prices seem high, they may be reasonable if they are similar to prices in other markets. In fact, the California market was not alone in these trends. Spot market (realtime cash market) prices were comparable in all Western markets (California North, South, California-Oregon border, Mid-Columbia, and Palo Verde).



In addition to these high power prices, transmission capacity into southern California was constrained nearly half the time. This means that lower cost power cannot flow into the San Diego area and instead, the PX and ISO must pay generators in the area extra to run their plants. This also resulted in higher prices for San Diego customers.

What does it mean?

The fact of the matter is that although prices are high, the wholesale markets are working. If they weren't, generators wouldn't operate and there would be statewide blackouts. It is important to note that generation can be bid into the market at a profit or a loss. Both happened during this period. High (profitable) bids provide investors with a return on their capital investment and an incentive for new investment. Low bids are common during early morning hours and more frequent in the spring and fall. Often, these result in wholesale energy prices of zero. These losses need to be offset with profits during the summer. As a result, it isn't obvious that participants in California's markets are making excessive profits on an annual basis. Moreover, profits need to be high enough to stimulate construction of new generation, as the long-term solution to the present problem is more generation. Fortunately, prices have been high enough to stimulate new power plant construction and new plants are expected to come on-line in the next 18 months.

Nevertheless, present market volatility is a clear indication that market reforms are needed and, in fact, many reforms are being discussed. Unfortunately, wholesale market reforms are not sufficient to address the problems and concerns faced by retail customers. Federal customers still need ways to protect themselves from price volatility and to manage their daily electricity use pattern to reduce purchases of power when prices are high.

There are four ways Federal customers can respond to uncertain, but volatile power markets:

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FEMP
Call for FY2001 Design Assistance Projects

The U.S. DOE Federal Energy Management Program provides technical assistance, financing assistance, education, and outreach to Federal agencies meeting energy efficiency and renewable energy goals set by legislation and Executive Order 13123. FEMP is interested in supporting projects in need of technical design assistance from Federal agencies in the following areas:

- Design of new sustainable low energy buildings;
- Energy efficiency retrofits, water efficiency, and/or renewable and distributed generation retrofits (including combined heat and power systems).

Assistance consists of screening for project opportunities, feasibility studies, procurement specifications, design review, and performance measurements. The total value of the general design assistance to be provided in FY01 is approximately $500,000. Design assistance will be provided by DOE National Laboratories and subcontractors selected from the best energy and sustainability consultants in the country for selected Federal agency projects. If you are interested in requesting design assistance from FEMP, please complete and submit the attached form by Oct. 30, 2000. Successful applicants will be notified by Dec. 15, 2000.

New Construction Projects

For new construction, FEMP is most interested in projects where design assistance can be provided from the early conceptual design through final design. For large/complex projects, such as Federal courthouses, we will consider projects for multi-year design assistance efforts. The assistance can include:

- Development of a building program or project goal statements,
- Selection criteria for A\Es and the development of a scope of work for an A\E,
- Generation and summary of site specific hourly weather files,
- Development of a basecase model of energy use and establishment of a performance goal,
- Development of specifications for contractor energy modeling, and possible review of contractor energy modeling,
- Participation in and facilitation assistance of a meeting(s) of the design team to identify energy reduction strategies to meet the goal,
- Life cycle cost comparison of options (including glazing, lighting, HVAC) to meet energy goals for the building,
- Evaluation of renewable energy strategies for the building,
- Design and specification review.

Retrofit Projects

For energy efficiency retrofit projects, FEMP is most interested in projects where measures are bundled to achieve greater energy savings than might otherwise be considered and projects where the technical design assistance leads to projects that are financed through Energy Savings Performance Contracts (ESPCs) or Utility Energy Service Contracts (UESCs). For retrofit projects, FEMP services may include:

- Analysis of opportunities (this more detailed analysis may be provided as a follow-on to a SAVEnergy audit),
- Engineering and economic feasibility assessment or screening of opportunities (using FEMP developed software) for energy efficiency, load management, water conservation, and/or renewable measures,
- Development and/or review of specifications and other construction documents and plans,
- Life cycle costing of options for measures using the Building Life Cycle Costing software,
- Assistance with planning for measurement and verification,

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- Assistance with commissioning/ retrocommissioning.

Renewable Energy Projects

In E.O. 13123, renewable energy is defined as energy produced from solar, wind, geothermal, or biomass power. The value of renewable assistance from this call in FY01 is $115,000. For renewable projects FEMP services may include:

- Engineering and economic feasibility assessment or screening of opportunities (using FEMP developed software),
- Development and/or review of specifications and other construction documents and plans,
- Life cycle costing of options for measures using the Building Life Cycle Costing software,
- Advice and assistance with planning for measurement and verification and performance measurement of installed systems.

This Call for Projects cannot be used for funding of hardware, or buy down of finance charges. Funding for successful applicants will not be transferred to agencies, rather the assistance will be provided directly by DOE national laboratories and/or FEMP contractors who will negotiate a scope of services with the successful applicants.

FEMP will use the following set of criteria to select the projects for FY01:

- *Balanced portfolio* — FEMP is interested in using this process to select a balanced portfolio of projects that include new construction, renewable energy, water conservation, energy efficiency, combined heat and power, and distributed generation. FEMP is also interested in using the available funds to seed a number of projects that collectively offer strategic value to achieving the goals of the FEMP program. The goals of the FEMP program are to reduce the cost of government by helping agencies reduce energy and water use, manage utility costs and promote renewable energy use.

  Technical assistance that leads to large projects financed through Energy Savings Performance Contracts or Utility Energy Service Contracts are a priority for FEMP as well as projects that can be replicated by agencies using their own funds.

- *Project champions* – The successful applicants will document that there is a team of technical, management, and procurement staff at the facility or within the agency that are committed to making the project a success.
- *Agency support for project* – The successful applicant will demonstrate that the success of their project is significant to their agency. If, for example, the agency has designated the project an agency showcase, a project meeting their Million Solar Roofs Initiative, Wind Powering America, or some other specific agency designated goal, it would demonstrate that the agency has a vested interest in making the project a success.
- *Cost effectiveness and value* – Energy or water efficiency projects must be life-cycle cost effective according to 10CFR436 or provide a good value as an educational demonstration or experimental project. Renewable projects should be life-cycle cost effective or provide other values such as emission and greenhouse gas reductions, load management, emergency power, or demonstration. The value to the FEMP program must be clearly defined.
- *Agency funding available* – The agency must document that agency funding is available for implementation in the next two years, or establish a plan to finance the project through Energy Savings Performance Contracting or a Utility Energy Service Agreement.

The applications will be scored based on the criteria listed above. Incomplete or omitted responses to questions will lower the overall application score.

The application form can also be found on the FEMP web site: www.eren.doe.gov/femp.

FEMP Project Design Assistance Request Form FY 2001

Federal Agency Name: ______________________________

Contact Person Name: ______________________________

Address: ______________________________

____

Phone\fax\e-mail**:** ______________________________

Project Name: ______________________________

Type of Project:

___ New construction

___ Energy efficiency retrofit (list ECMs) ______________________________

___ Renewable project (list measures) ______________________________

___ Water efficiency

___ Distributed Energy Resources

Description of Design Assistance request (500 word max): ______________________________

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____

____

Estimate of level of effort needed (days): ______________________________

Size of capital project (list size of buildings (s.f.) and /or value of construction ($)): ______________________________

____

Describe your agency's level of commitment to supporting this particular project: ______________________________

____

____

____

Is this an agency "showcase" project? If yes, describe: ______________________________

Is this a project supporting the Million Solar Roofs Initiative, DOE's Wind Powering America, or Geopower of the West program? _____ If yes, describe ______________________________

____

How will your agency fund or finance this project? ______________________________

____

What is the unit cost and type of energy being displaced by this project?

Electricity: _____ Natural gas: ____ Propane: ____ Diesel: ___ Gasoline: ___ Other: ____

What is your annual energy cost for the building(s) or facility where the project is proposed? ______________________________

____

For projects involving water efficiency, what is your annual water usage for the building or facility? ______________

For projects involving water efficiency, what is the unit cost of water and sewer? Water __________ Sewer __________

If you have completed a BLCC analysis for this project or you have documented the cost of the measures and proposed savings, please attach it to your application.

Thank-you for your application!

Fax or mail this form by October 30, 2000 to: Shawn Herrera, FEMP, US Department of Energy, Forrestal Building EE-90, Washington DC, 20585, Fax: 202 586-3000.

Also please fax or e-mail a copy of the form to your FEMP regional office. Call your regional representative with questions. They include:

Central Region
Randy Jones
Phone: 303-275-4814
Fax: 303-275-4830
E-mail: randall_jones@nrel.gov

Northeast Region
Paul King
Phone: 617-565-9712
Fax: 617-565-9723
E-mail: paul.king@hq.doe.gov

Western Region
Arun Jhaveri
Phone: 206-553-2152
Fax: 206-553-2200
E-mail: arun.jhaveri@hq.doe.gov

Mid-Atlantic Region
Bill Klebous
Phone: 212-264-0691
Fax: 212-264-2272
E-mail: william.klebous@hq.doe.gov

Southeast Region
Rich Combes
Phone: 404-562-0563
Fax: 404-562-0537
E-mail: combes@hq.doe.gov

Midwest Region
Sharon Gill
Phone: 312-886-8573
Fax: 312-886-8561
E-mail: sharon.gill@hq.doe.gov

Call for FEMP Design Assistance Services Frequently Asked Questions

What is FEMP Design Assistance?
FEMP's Design Assistance is a program to expand energy efficiency and renewable energy use in Federal facilities and to provide guidance for cost-effective strategies for both new design and retrofit activities. This program includes design assistance for comprehensive "greening" activities, renewables, energy efficiency, and water-saving projects.

What specific services does FEMP Design Assistance provide to Federal Energy Managers?
FEMP's design assistance team works with Federal agency staff to develop individual solutions for their particular needs. Examples of design assistance includes the following:

- Setting energy and water design objectives for a new or retrofit project
- Identifying technical resources for energy and water efficiency and renewable projects
- Providing technical assistance in areas where services are not readily available
- Evaluating design strategies and proposing alternatives
- Recommending commissioning and operations activities
- Evaluating energy and other performance criteria after the project is installed.

What services does FEMP Design Assistance not offer to Federal Energy Managers?
Except in special cases, the design assistance team typically does not provide services that are offered in the private sector. Basic energy services should be part of any design or retrofit project, and the design assistance team can assist Agencies in developing criteria for the selection and procurement of those services and assisting in agency review of those services.

What FEMP Design Assistance services are free and what are cost shared?
To the extent possible, FEMP offers core design assistance free of charge to Federal agencies. Because of its limited budget, FEMP Design Assistance cannot cover all the requests for services. In many cases, the agencies can cost-share with DOE for its design assistance needs. In these cases an Interagency Agreement between the agency and DOE will allow for cost-shared design assistance.

How much design assistance can I request?
A design assistance request can range from a simple question to detailed technical assistance. Quick projects can be a day or two of assistance, while more involved projects can last several months.

What criteria are used in determining which requests are supported?
All design assistance requests are evaluated on an individual basis. Criteria for acceptance include whether there is a high probability of success, the project can be replicated elsewhere and other factors described in the Call for projects.

What is the total amount of FEMP Design Assistance that will be offered through the Call Letter?
For the first year, 50% of the FEMP Design Assistance (approximately $500,000), and 50% of FEMP Renewable Assistance ($115,000) will be offered through the call letter. The remaining funds will be held in reserve for previously initiated projects as well as new projects that come in during the year.

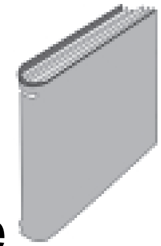
What is the schedule for submitting requests for Design Assistance
The schedule for requests is as follows:

- September 15, 2000: Notice of call letter in FEMP Focus requesting design assistance applications
- October 30, 2000: Applications due to FEMP HQ
- December 15, 2000: Awardees notified of their acceptance.

How do I request FEMP Design Assistance?
Complete the attached one-page form and send it to the address on the form.

Who can I contact if I have questions?
The DOE HQ Program Manager for FEMP Design Assistance is Shawn Herrera, 202 586-1511. Contacts in the FEMP regional offices can also answer your questions.

Utility Management and Planning –



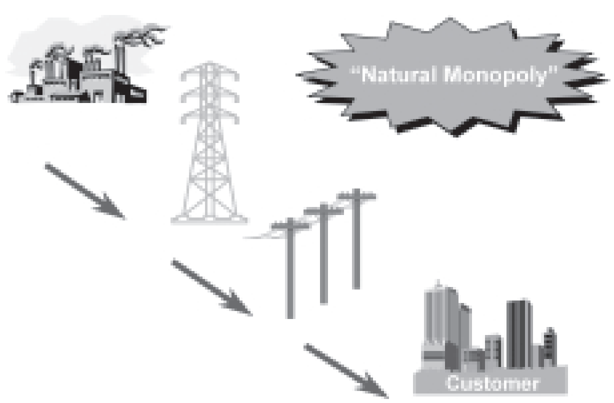
Electric Industry Restructuring Primer Now Available

The Federal Energy Management Program is distributing an Electric Industry Restructuring Primer. In response to the electric utility industry's complexity, the General Services Administration (GSA) and FEMP commissioned a Primer geared towards Federal facility managers and others to help understand changes in deregulation and industry restructuring.

The Restructuring Primer attempts to translate key aspects of electric utility operations and regulations into practical terms that clarify how utilities work and how deregulation and restructuring are changing them. The Primer is being published on CD-ROM to facilitate the addition of appropriate graphics, in-depth sidebar discussions, and an interactive glossary. The CD format also lends itself to periodic updating and expansion and uses the same format as the FEMP Restructuring Web site where the Primer also is posted.

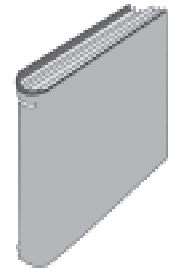
Roughly half of the states have adopted deregulation legislation and virtually all-large utilities have restructured their operations in response, including internal reorganizations, mergers, and divestitures of generation and transmission assets. The broad outlines of deregulation in California were followed by most of the 23 states that have followed suit. These include:

- Customer choice of power suppliers, except the local distribution utility will continue to deliver power to each customer,
- A transition period between regulated rates, and fully competitive power purchases,
- Recovery, by the utility in transitional rates, of costs that the utility will not be able to recover in fully competitive markets, so-called stranded costs,
- Restrictions on distribution utilities' ability to sell power to consumers in competitive markets,
- Restriction on incumbent utilities' ability to sell power in the new, competitive market, including a requirement to sell some or all of their generators,
- Centralized operation of generation and transmission in an Independent System Operator (ISO),
- Continuation of existing regulated rates, often with an automatic rate cut, during the transition period,
- Continuation of a regulated rate for customers who do not choose a new power supplier or are unable to obtain service from the competitive market, so called default service,
- Expectations of significant rate and bill reductions after the transition period ends, and
- Continuation of existing demand side management (DSM), low-income assistance, and other so called public benefits programs for some period of time.



We are in a state of transition from the traditional utility model, shown here, to a competitive model. The future configuration of the utility industry is still uncertain.

Utility Management and Planning



FEMP Completes Guidebook on Renewable Energy Purchases

The Federal Energy Management Program has prepared a guidebook to assist Federal agencies considering purchases of renewable energy. The guidebook is intended primarily for Federal agency energy managers and contracting officers with facilities located in states that have opened their electricity markets to competition or with facilities in areas served by utilities that offer green pricing programs.

Definitions of renewable energy and green power are discussed and the potential benefits and costs of Federal renewable energy purchases are identified in both regulated and restructured markets. The guidebook discusses key issues that agency teams should consider in purchasing renewable energy: how much of the renewable generation would come from new generation facilities, the percentage of the total electricity purchase generated from renewables, and environmental characteristics of the non-renewable portion of the electricity purchase. Drawing upon lessons learned from agencies that have completed renewable energy purchases recently, key elements of a successful procurement are outlined. References are also provided to the services offered by the General Services Administration and Defense Energy Support Center for those agencies that may be interested in renewable power, but prefer not to run their own procurements. The guidebook also provides sources of authority for renewable purchases, and Federal requirements, specifically those included in the Federal Acquisition Regulation, are referenced.

Interested parties will soon be able to find Purchasing Renewable Energy: A Guidebook for Federal Agencies *on the FEMP Web site at www.eren.doe.gov/femp.*

Procurement

Guide Specifications with Energy-Efficiency "Built-in"

The Federal Energy Management Program has been promoting energy-efficient purchasing since the mid-1990s, most notably through its series of *Product Energy Efficiency Recommendations*, published on the Web at www.eren.doe.gov/femp/procurement and also in a printed binder called "Buying Energy Efficient Products." The popular two-page *Recommendations*, which FEMP began publishing in 1996, now covers more than three dozen products, ranging from residential dishwashers to 2,000-ton chillers.

Despite the success of the *Recommendations* (there are roughly 3,500 subscribers to the binder, and the Web site receives thousands of visits each month), FEMP still faces a difficult task to truly "institutionalize" energy-efficient purchasing throughout the government. As FEMP program manager Katie McGervey puts it, "We know the *Recommendations* make it easy – now we want to make it automatic."

One of the program's biggest success so far is due to several Federal agencies that decided to incorporate the FEMP-recommended product efficiency levels into their agency guide specifications for construction and major renovation. Guide specs, also called "master" specifications, are the templates upon which individual building project specifications are based.

There are several prominent instances of Federal agencies that have "hard-wired" the FEMP efficiency criteria into the design and construction procurement process through guide specs. Both the Army Corps of Engineers and the U.S. Navy (through the Naval Facilities Engineering Command) have re-written their guide specifications on lighting to ensure that fluorescent tube ballasts and lamps, as well as exit signs, comply with the levels proposed in the FEMP *Recommendations*. The Army Corps has also incorporated FEMP efficiency levels in its guide specs for other products, including motors, unitary air conditioners, and chillers.

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Alternative Financing

Alternative Financing Q&A

Is it possible to include training in a delivery order award under DOE's Super ESPCs?

Super ESPCs are often a new way of doing business for many agencies, and FEMP recognizes this. A customer agency can purchase many different kinds of help from FEMP, one of which is specialized training. This can take the form of informal meetings between the agency team and FEMP personnel, or could be a more formal, customized training session that addresses specific concerns the agency team has about their prospective project. FEMP's project facilitator will also be available to the agency throughout the delivery order process.

If the ESCO does not meet its energy savings guarantee, how are they paid?

This question highlights an extremely advantageous feature of DOE's Super ESPC program. An ESCO will guarantee a certain level of annual energy savings throughout the project's contract term. If this level of energy savings is not met, then the agency does not have any obligation to pay the ESCO. In other words, if the ESCO does not produce quality work and the promised level of energy savings, they do not get paid.

What questions do you need answered? FEMP wants to provide the most useful information possible, but we need your help to achieve this! Please submit your questions via e-mail to Tatiana Muessel at: tatiana.muessel@ee.doe.gov.

THE WRATH OF POWER MARKETS: PRICE SHOCK IN SAN DIEGO

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1. Obtain fixed prices for some or all of the power you buy. Fixed prices eliminate volatility by design. If all the power you buy costs 3 cents, it doesn't matter that the PX price is $1.10 cents. There is a risk that you may pay too much when compared to market rates, (3 cents may be more than the annual average of 2.5 cents), but protection from unknown price spikes may still be worth it. In addition to asking for fixed prices when you procure power, you can also reduce price risk through a variety of financial instruments.

2. Control your peak energy usage. This can be accomplished by focusing energy-efficiency investments on uses that normally occur during summer afternoons, such as office lights and air conditioners. It can also be accomplished by actively controlling critical loads so that they can be turned off during high price periods. In order to maximize the savings from load control, you should be on a time-of-use rate. Otherwise you may not get credit for your actions.

3. Switch fuels for uses that tend to be used during peak hours, such as chillers. Natural gas is not priced on a time-of-use basis and is therefore not subject to the same kind of price swings as electricity.

4. Invest in new technologies that provide greater control over times of use in conjunction with market prices. This includes energy storage technologies, on-site generation, and cooperative development of district cooling and energy storage systems with adjacent customers.

Taking these steps will provide Federal customers with control over power bills until wholesale market reforms reduce price volatility and new generation gives Federal customers more reasonable price options and control over power bills. For advice or assistance with any of these options, contact the Federal Energy Management Program (FEMP).

Steam Traps Maintenance an ESPC and UESPC Opportunity

Approximately 20 percent of the steam leaving a central boiler plant is lost via leaking traps in typical space heating systems without a proactive assessment program. Facility managers should ensure that their facility has a proactive steam trap maintenance program to assure they are using steam efficiently. There are two ways to provide this type of program: (1) use your operation and maintenance (O&M) dollars to fund this program (in-house or contract) or (2) use an energy savings performance contract (ESPC) or a utility energy services contract (UESC) and let the savings pay for the program. In a single day, steam loss can cost more than the trap and labor required to replace it.

The annual cost of a single failed trap with a 1 cm (3/8”) orifice in a 690 kPa (100 psi) system where steam cost is $5 per 375kg (1000 lbs) is more than $28,000. The cost to replace the trap is approximately $1,000 depending on pressure location, type, etc. This leaves $27,000 on the table to help make other energy conservation measures (ECM) cost effective. A recent survey of 4,442 steam traps at a major military installation identified 454 failed traps passing more than 104 million pounds of steam per year at an annual cost of $380,000 per year. The cost of steam was just under $3.70 per 1,000 pounds of steam produced (no labor savings are included in this number). The repair of these steam traps had a payback of less than 8 months. This ECM’s short payback was blended with other longer paybacks from other ECMs to make them cost effective.

Steam traps are automatic valves used in every steam system to remove condensate, air, and other non-condensable gases while preventing or minimizing the passing of steam. If condensate is allowed to collect, it reduces the flow capacity of steam lines and the thermal capacity of heat transfer equipment. In addition, excess condensate can lead to “water hammer,” with potentially destructive and dangerous results. Air that remains after system startup reduces steam pressure and temperature and may also reduce the thermal capacity of heat transfer equipment. Non-condensable gases, such as oxygen and carbon dioxide, cause corrosion. Steam that passes through the trap provides no heating service. This effectively reduces the heating capacity of the steam system or increases the amount of steam that must be generated to meet the heating demand.

Conventional traps fit one of three categories: mechanical, thermostatic, or thermodynamic. Each type of trap has a different application. Most traps are designed to fail in the open position in order to protect the steam generation process. However, at failure, the trap dumps live steam continuously to the condensate return. This return line pressure can cause other traps to fail in a cascading manner. Avoid fixed-orifice traps because they continually blow off live steam and have no way to compensate for variable rates of condensation. Traps subject to freezing temperatures may be damaged by water held inside the trap when the steam system is shut down. Replace traps subject to freeze damage with self-draining types.

Baselining and measurement and verification (M&V) can be accomplished using visual, sonic and/or thermal techniques. Visually observing trap discharge dumped temporarily to the atmosphere is the most straightforward and reliable method. Sonic methods are very popular and employ hollow pipes, stethoscopes, or sonic detectors placed on the trap. For each type of trap tested, maintenance personnel must distinguish between sounds associated with proper operation and failure. Methods that rely on temperature differences across the trap to indicate proper operation can miss both small and large leaks.

These methods have been used to assess the performance of steam traps since steam traps were invented, but the measuring technology has evolved over the years. In particular, sound measurement has progressed to include ultrasonic

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Sandia Tasks FEMP Expertise to Hold Unique Energy Programming Workshop

A new cleanroom/support facility and laboratory planned for Sandia National Laboratories promises to be considerably more energy efficient as a result of an aggressive and innovative energy strategy being implemented by the project team. The DOE Kirtland Area Office, through its project manager Jeanette Norte, strongly backs the design of an energy-efficient cleanroom and support facility. She has given Sandia the liberty to do a thorough development that will yield the best life-cycle cost of the project.

Based on his experience with a previous FEMP-supported laboratory energy audit at the Sandia, Energy Manager Ralph Wrons set a goal to reduce energy use for the new energy-intensive facility by 50 percent (over $500,000 per year) from current practice. During the Conceptual Design Report (CDR) preparation, Mr. Wrons requested FEMP's technical expertise in the small and fast-growing specialty of cleanrooms and "fab" facilities to review the direction the design team was taking. Using the input provided by Lawrence Berkeley National Laboratory (LBNL), Mr. Wrons provided the design team numerous energy-efficiency recommendations for the final CDR.

In June, the project entered the Design Criteria phase. Mr. Wrons recognized it as a prime opportunity to lay a strong foundation for energy efficiency. He arranged a novel workshop to brainstorm a wide range of energy measures and approaches that could be integrated into a design. This review involved many of the project staff and project stakeholders. The aim of the workshop was to educate and engage all the participants for the necessary "buy-in" to develop a Design Criteria with a strong energy-efficiency focus.

FEMP technical assistance for the workshop was provided by Dale Sartor and Bill Tschudi of LBNL's Applications Team, along with Sandia-

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PARTNERSHIP HELPS GSA BRING PV POWER TO BOSTON EDISON'S NETWORK

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GSA's local utility partner, Boston Edison, also played a role in making this project happen. GSA's project team and Boston Edison signed a Memorandum of Understanding to test the viability of renewable distributed generation on their network distribution system. Boston Edison now considers distributed generation on their network system a valid option for all customers.

GSA's relationship with Boston Edison continues to flourish. They make extensive use of area-wide contracting, and have just completed a full chiller plant replacement (1100 tons) at the 700,000-square-foot O'Neill Federal Building in Boston. The million-square-foot JFK Federal Building, also in Boston, is scheduled for a partial chiller plant (900-ton) upgrade this fall.

According to the GSA's Roman Piaskoski, "GSA is pursuing any distributed generation opportunities that may be out there. We're working with Boston Edison, which seems to recognize the value of that market niche. And we're trying to look for the nontraditional benefits that are supposed to be a part of market deregulation."

GSA is very proud of the solar array now operating on this downtown Boston Building. And in April 2000, the Williams Building project team received an award in honor of their successful participation in the President's Million Solar Roofs Initiative.

For more information, please contact Roman Piaskoski, GSA New England Region, 617-565-4693.

Energy 2001 Workshop

Join hundreds of government and private sector energy managers at Energy 2001 - An Energy Efficiency Workshop & Exposition in Kansas City, Missouri, June 4-6, 2001. This annual event is sponsored by the Federal Energy Management Program (FEMP) and co-sponsored by the General Services Administration and the Department of Defense. It has become one of the nation's premier gatherings of energy managers looking for ways to identify and learn about the most cost-effective energy-saving, renewable energy and water efficiency products and services.

This event will consist of informative technical sessions along with an exposition. The event will be held at the Hyatt Regency–Crown Center in Kansas City. Firms interested in exhibiting at Energy 2001 should contact Exhibit Promotions Plus, Inc. at (410) 997-0763 or exhibit@ epponline.com to reserve a booth. A block of rooms at the government per diem rate has already been established at Hyatt Regency for those planning to attend this event. To make reservations, call 1-800-233-1234 and indicate you are associated with the Energy 2001 event.

Specific information regarding the workshop tracks, associated sessions, and presentations is available on www.energy2001.ee.doe.gov, the Energy 2001 Web site. Information also will be posted on the FEMP home page.

For more information on Energy 2001, contact Rick Klimkos of FEMP at 202-586-8287.

FEMP Training Reminders

Sept. 25- Dec. 1	FEMP Lights *(Web Course)* 425-640-1010
Sept. 27-28	Milwaukee, WI *International Energy and Environmental Congress (IEEC)* FEMP Symposia 703-243-8343
Oct. 17-18	Los Angeles, CA *Electric Utility Restructuring and Utility Project Financing* 703-243-8343
Oct. 23-24	Atlanta, GA *Super ESPC* 703-243-8343
Oct. 24-25	Denver, CO *Life Cycle Costing (Basic)* 509-372-4368

FEMP FY 2001 Training Catalog is Here!

The annual FEMP Training Catalog is now available. It brings you schedule and registration information for FEMP's FY 2001 classroom and distance learning workshops and seminars at national conferences. This year, the catalog provides guidance on how to use the new Web-based version of FEMP's Training Event LOCATOR, for non-FEMP Training courses. A new section provides "Special Opportunities" for obtaining guidance concerning the Energy Star® Buildings Program, measurement and verification and other important subjects.

FEMP Focus subscribers already should have received a copy of the 2001 Training Catalog. Single or multiple copies may be requested from the FEMP Help Desk at 1-800-DOE-EREC or fax requests to 703-893-0400. A PDF version of the Training Catalog can be found on the FEMP Web site at www.eren.doe.gov/femp/resources/training/femptraining.html.

SANDIA TASKS FEMP EXPERTISE TO HOLD UNIQUE ENERGY PROGRAMMING WORKSHOP
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contracted Supersymmetry, Inc., an energy consulting firm specializing in advanced energy efficiency for cleanroom facilities. David Humphrey of the Department of Energy's Denver Regional Office, obtained the technical assistance for Mr. Wrons through FEMP's Design Assistance Program, and also provided assistance to the workshop.

The workshop emphasized the integrated design approach to achieving advanced energy efficiency. Mr. Tschudi and Peter Rumsey (Supersymmetry) first presented specific energy-efficiency strategies and considerations for cleanroom operation. Then the team discussed project constraints. Next, a 2-hour brainstorming exercise allowed all participants to provide ideas in many categories: General, Design & Construction Process, Architecture, Mechanical, Process/tools, Cleanroom Fans, Energy Metering, Performance Metrics and Electrical.

The team then rated the recommendations into one of three categories: "A" – Definitely implement the idea; "B" – Study the recommendation for possible inclusion; or "C" – Drop for the time being.

The timing for the workshop was especially critical to enable incorporating as many energy-efficiency ideas as possible before the design criteria progressed to a point where energy-inefficient decisions are "locked-in". The benefit here can be immeasurable in energy accounting terms, because the design of the facility then integrates these pre-design criteria, instead of energy efficiency having to compete later for attention and budget dollars by the project team. Another key benefit of early integration is the ability to actually lower the capital cost of construction through intelligent design synthesis.

Many of the participants responded very favorably on the value of the workshop, including Wayne Evelo, the DOE Kirtland Area Office's expert for sustainability, and Milton West, Kirkland's Infrastructure Engineer for the project.

Mr. Wrons felt the workshop met his expectations which covered getting details on advanced energy-efficiency options in the early stages of design criteria development, good technical assistance from FEMP, good participation from the project stakeholders, and consensus on many of the brainstorm ideas. The intent is that this approach will continue into the design (a design charrette with the eventual design firm is planned), so it is likely that many of the ideas generated during the workshop will be implemented in the Design.

For more information about this workshop, contact Ralph Wrons at 505-844-0601;rjwrons@sandia.gov, or Dave Humphrey at 303-275-4757; dave_Humphrey@nrel.gov.

STEAM TRAPS MAINTENANCE AN ESPC OPPORTUNITY
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devices that compare measured sounds with the expected sounds of working and non-working traps to render a judgment on trap condition. Equipment using a fourth method, based on the conductivity of the fluid at a specific point in the pipeline, has also been developed in recent years. These advanced technologies are often coupled with temperature-measuring capability to increase diagnostic accuracy. Fixed test equipment, allowing continuous monitoring and evaluation, can reduce losses to less than 1 percent.

The retrofit of sight glasses or test valves allowing a visual assessment of steam trap performance should be carefully considered. While visual assessment is judged by the majority of steam trap experts to be the best assessment technique, the cost of retrofitting this type of equipment is significantly greater than any portable temperature or sonic test equipment and comparable to conductivity-based test equipment. The latter has the advantage of being wired for continuous, remote monitoring, however, which should reduce operating costs and improve steam system efficiency for a relatively modest incremental investment, compared with sight glasses or test valves.

The widespread cost-effectiveness of proactive steam trap maintenance is well documented in the literature. Thus, implementing almost any type of steam trap maintenance program will be beneficial; selecting the specific type of assessment equipment is of secondary importance.

GUIDE SPECIFICATIONS WITH ENERGY-EFFICIENCY "BUILT-IN"

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The Navy, in conjunction with major manufacturers, also developed a selection matrix for use by project engineers specifying efficiency levels for liquid-filled distribution transformers, based on life-cycle cost determined by the average cost of electricity at each facility. Finally, the Veterans Administration and the U.S. Postal Service have adopted guide specs that require highly reflective roofing products that comply with the requirements of the ENERGY STAR® label.

A key advantage of incorporating energy efficiency criteria through guide specs is that this greatly simplifies the process, and makes the efficient choice the easy choice. Instead of adding a special requirement for energy-efficient products or practices for each project (or purchase), once these criteria become part of the guide spec these provisions are likely to be used time after time, with little or no change from one project to the next. Guide specs provide an enormous source of leverage – even outside the Federal sector, in cases where specifying engineers and architects decide to use the same Federal criteria on projects for their non-Federal customers.

Executive Order 13123 specifically directs agencies to include energy-efficient product requirements in specifications:

Sec 403 (b)(3)

"Agencies shall incorporate energy efficient criteria consistent with ENERGY STAR® and other FEMP-designated energy efficiency levels into all guide specifications and project specifications developed for new construction and renovation, as well as into product specification language developed for Basic Ordering Agreements, Blanket Purchasing Agreements, Government Wide Acquisition Contracts, and all other purchasing procedures."

This provision reinforces FEMP's mission to make energy-efficient purchasing simple and straightforward. In many cases, the Army Corps of Engineers, Navy, Postal Service, and Veterans Administration have now made energy-efficient purchasing automatic through their guide specifications. Whether agency-wide or merely at the facility level, incorporating energy efficiency criteria into guide specifications is an extremely effective way to institutionalize these good practices – and to reap the savings that result.

For more information contact Katie McGervey of FEMP at 202-586-4858 or katie.mcgervey@ee.doe.gov.

EO 13123 GUIDANCE ON ELECTRICITY USE

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- When establishing requirements for renewable energy in addition to amounts mandated as part of a state renewable portfolio standards (RPS) requirement, agencies are encouraged to conduct initial market research to ensure that renewable energy is available in the quantity requested, is not already committed to other customers, and is not priced so as to negate any possibility of award.

Evaluation Criteria

- Agencies should indicate that the fraction of renewable energy in the overall resource portfolio may be used as an evaluation factor in their electricity procurements.

- Another approach is to use the fraction of renewable energy in the supplier's proposed generation resources as a tie-breaker if offers are comparable on other attributes.

- Agencies should consider including evaluation criteria related to the environmental attributes of the non-renewable generation portions of electricity products because it will directly affect an agency's ability to meet greenhouse gas emission reduction goals (Executive Order 13123, Section 201).

Procurement approaches

- Agencies may specify that the electricity product to be purchased must include a specified amount or fraction of power (X percent) from renewable energy as a threshold requirement.

- Another approach is for agencies to essentially specify two products as part of a requirements purchase: a product that includes renewable energy and a conventional power product. *The full text of the guidance developed by the UWG and issued by the IATF will be available on the FEMP Web site.*

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documents will be available on the FEMP Web site once approved.

There are several other goals Federal agencies should be aware of related to the use of renewable energy. On April 20, 2000, Secretary of Energy Bill Richardson directed DOE to purchase 3 percent of its total electricity needs from non-hydro renewable energy sources by 2005, and 7.5 percent by 2010. The Wind Powering America (WPA) program has set a goal that 5 percent of the Federal government's electricity come from wind power by 2010.

Completed Projects

The Federal government has signed a number of renewable power contracts and agreements, including the recent U.S. Postal Service contract in California for approximately 1000 facilities and the Denver Wind Purchase Initiative. These projects are summarized in the accompanying table.

Current Projects

The Fermi National Accelerator Laboratory and the Argonne National Laboratory have included a renewable power option in their recently issued electricity request for proposal in Illinois.

Upcoming Events

There are Green Power summits planned for both the Southwest (September 7-8 in San Diego, CA) and the Pacific Northwest (September 28-29 in Seattle, WA). The first day will consist of general green power information, while the second day will be focused on the Federal sector. Federal agencies in those regions that are interested in renewable energy are encouraged to attend one of these conferences.

Resources

There are a number of resources available to Federal agencies interested in renewable energy.

- "Purchasing Renewable Energy: A Guidebook for Federal Agencies" – authored by Lawrence Berkeley National Laboratory. See accompanying article on page 18.

- Renewable Power Purchasing Toolkit - The National Renewable Energy Laboratory staff worked with the DOE Denver regional office staff to develop a toolkit based on the Denver Wind Purchase Initiative. This toolkit has been sent to representatives in each of the DOE and General Service Administration (GSA) regions.

- GSA has green power information posted on their web site at www.gsa.gov/pbs/centers/energy/green.htm.

Information regarding renewable power purchasing opportunities can be found on the Green Power Network:

- www.eren.doe.gov/greenpower/pricing.shtml, and

- www.eren.doe.gov/greenpower/marketing.shtml.

Additional information regarding some of the Federal renewable purchasing projects may be found in the following *FEMP Focus* articles:

- EPA Becomes the First Federal Agency to Buy 100 percent Green Power (Sept/Oct '99) www.eren.doe.gov/femp/newsevents/femp_focus/oct99_epa_green_power.html.

- EPA Continues Efforts with GSA to Purchase Green Power (March/April '00) www.eren.doe.gov/femp/newsevents/femp_focus/mar00_epa.html.

- Federal Agencies in Denver Commit to Wind Purchases Equivalent to 10 MW (May/June '00).

- www.eren.doe.gov/femp/newsevents/femp_focus/may00_wind_purchases.html.

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Services Administration (GSA) is working with two ESCOs that are developing projects at five facilities. NYSERDA will provide about $410,000 in financial incentives for these projects as the ESCO verifies savings from installation of high-efficiency measures over the two year contract term; the incentives reduce the initial cost of the project by about 20 percent.

- In California, Southern California Edison (SCE), Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), and SoCal Gas are administering approximately $275 million per year of energy efficiency programs funded through a public purpose charge on customers' bills. Federal customers are participating in several of the programs offered by the utilities. For example, the Postal Service is participating directly in SCE's Standard Performance Contract program, and will receive roughly $50,000 in financial incentives upon verification of savings from compressed air improvements at two processing and distribution centers. The Air Force has been working with an ESCO at one ir Force base which is currently developing a project that will provide more than 2 million kilowatt-hours in savings annually and will receive about $260,000 in financial incentives upon installation and verification of savings. Several agencies have received technical and design assistance as well as financial incentives through their participation in SCE's Savings by Design Program, which encourages customers to utilize innovative energy efficiency strategies that go beyond California's Title-24 building energy codes in new construction and major renovations. The USPS received more than $50,000 in financial incentives for high-efficiency measures installed in four new postal facilities, while the Navy received design assistance and financial incentives for high-efficiency measures installed at Morale, Welfare, and Recreation facility at Port Hueneme.

- In the Pacific Northwest, the Northwest Energy Efficiency Alliance (NEEA), a non-profit corporation that includes the region's utilities and Bonneville Power Administration on its Board of Directors, promotes energy efficiency and market transformation initiatives in the region. Federal agencies can take advantage of NEEA projects that offer Building Operator Certification targeted at producing high quality building operators who can improve the efficiency of buildings and encourage commissioning of new buildings.

The FEMP Web site provides state-by-state information on energy efficiency program opportunities available to Federal customers (www.femp-restructuring.org).

Table 1

State	Annual Funding (Million $)	Program Administrator
California	~$ 275.00	Utilities
Connecticut	$ 87.00	Utilities
Delaware	$ 1.50	State Agency
Illinois	$ 3.00	State Agency
Maine	$ 17.00	Utilities
Maryland	$ 13.00	Utilities
Massachusetts	$ 130.00	Utilities
Montana	$ 14.00	Utilities
New Jersey	$ 87.50	TBD
New York	$ 54.00	NYSERDA
Ohio	$ 15.00	State Agency
Oregon	$ 31.50	Non-profit
Pennsylvania	$ 11.00	Utilities

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Denver RO:	CO, KS, LA, MT, NE, NM, ND, OK, SD, TX, UT, WY
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LBNL:	Lawrence Berkeley National Laboratory
NREL:	National Renewable Energy Laboratory
ORNL:	Oak Ridge National Laboratory
PNNL:	Pacific Northwest National Laboratory
SNL:	Sandia National Laboratories

2001 Utility Financing and Deregulation Impacts Workshops

This fiscal year the Federal Energy Management Program (FEMP) will once again offer Utility Financing and Deregulation Impacts Workshops. FEMP will collaborate with key Federal Resource Center Partners to bring these courses to Federal agencies. In this two-part course, facility energy managers, agency contracting officers, regional and upper level managers, legal staff, and other members of the team receive an overview of the project financing options available through utilities. The Restructuring Impacts segment addresses key restructuring questions, such as: How is restructuring being implemented? What are the plans for my region? How is it working elsewhere? What should I expect? How should I prepare? The primary focus is on preparing for competitive power procurements.

FY 2001 Workshops are tentatively scheduled for the following locations:

Region	Location	Date
Western	Los Angeles, CA	Oct. 2000
Central	Golden, CO	Jan. 2001
Mid-Atlantic	Washington, DC	April 2001
Midwest	Chicago, IL	July 2001

For more information contact Brad Gustafson, Utility Program manager, FEMP, 202-586-2204, Brad.Gustafson@ee.doe.gov. Information on FEMP workshops can also be found at: http://www.eren.doe.gov/femp/utility/utilincent_train.html.

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